Morbidity

In this report, morbidity refers to incidences of illness or injury, both physical and psychological, which are directly attributable to substance use. For illustrating the extent of a particular illness or type of injury, Table 4.5 indicates the number of Emergency Department visits or hospital discharges related to substance use. Tables 4.6 and 4.7 describe treatment need. Table 4.6 outlines operation of vehicles while under the influence, and Table 4.9 is specific to cases of Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome (HIV/AIDS) resulting from drug use. The indicators in Table 4.10 are grouped into three domains: clinical dependence or abuse, including Emergency Department visits and hospital discharges; drunk driving and boating; and HIV/AIDS resulting from substance use. Subsequent tables are domain specific.

As seen in Tables 4.5 through 4.17, the absolute number of illnesses and/or injuries related to substance use is much greater than the absolute number of deaths related to such use (see *Mortality*). Thus, a focus on reducing substance use-related injury and illness provides a much larger target for intervention efforts and would likely also reduce deaths related to substance use.

Clinical Dependence or Abuse Morbidity.

The National Survey on Drug Use and Health provides estimates of the number of people in Arizona that have a clinical dependence on and/or abuse alcohol or drugs. Clinical dependence and abuse is measured using criteria from the Diagnostic and Statistical Manual of Mental Disorders, *4th edition* and is diagnosed when alcohol or drug use is chronic or excessive enough to cause behavioral, psychological, or lifestyle problems.

The Arizona Department of Health Services (ADHS) maintains a database of inpatient hospitalization and Emergency Department discharges. Under the uniform patient reporting system mandated by A.R.S. § 36-125.05, all of Arizona's licensed, non-federal hospitals (except for psychiatric hospitals) are required to report data to the ADHS on a biannual basis, (i.e., on February 15th and August 15th of each year). Each data set report includes inpatient and Emergency Department hospital discharges for a six-month period by each hospital. The Department currently collects approximately 2.2 million discharge records annually from the state's licensed hospitals. When an admitted patient leaves a hospital or when an individual visits an Emergency Department, up to nine diagnoses are recorded. Diagnoses are based on the *International Classification of Diseases, 9th Revision*. Data are reported for drug and alcohol-related diagnoses that were listed as the primary or first diagnoses as well as drug and alcohol-related diagnoses that occurred in any of the nine diagnoses.

Table 4.5 demonstrates that the largest diagnoses category related to substance use was Emergency Department visits for the non-dependent abuse of drugs. According to the *International Classification of Diseases, Ninth Revision, Clinical Modification*, the diagnosis of non-dependent abuse of drugs "includes cases where a person, for whom no other diagnosis is possible, has come under medical care because of the maladaptive effect of a drug on which he is not dependent and that he has taken on his own initiative to the detriment of his health or social functioning" (http://www.eicd.com/EICDMain.htm).

In 2005, 12,432 Emergency Department visits had non-dependent abuse of drugs listed as the first diagnosis, followed by Emergency Department visits for alcohol or drug dependence (3,458) and alcoholic or drug psychoses (2,844). The most often cited substance abuse-related first-listed diagnosis upon hospital discharge was for alcoholic or drug psychoses (2,417), followed by 1,105 discharges for alcohol or drug dependence and 570 discharges for non-dependent abuse of drugs. Therefore, there were more Emergency Department visits for the non-dependent abuse of drugs than for alcohol or drug dependence or psychoses. In contrast, there were more hospital discharges for alcoholic or drug psychoses than there were for alcohol or drug dependence or the non-dependent abuse of drugs. Further, according to data from the 2005 *National Survey on Drug Use and Health*, an estimated 466,000 people in Arizona, ages 12 and older, are dependent on or abuse alcohol and an additional 137,000 people are dependent on or abuse illicit drugs (Table 4.11).

Finding: Alcohol and drug psychosis and dependence diagnoses are less common in Emergency Departments compared to the non-dependent abuse of drugs.

Table 4.5. **Hospital and Emergency Department Discharges and Visits by First-Listed Substance Abuse Diagnosis, Arizona, 2005**

	N
ED visits for alcoholic or drug psychoses	2,844
ED visits for alcohol or drug dependence	3,458
ED visits for non-dependent abuse of drugs	12,432
Total	**18,744**
Hospital discharges for alcoholic or drug psychoses	2,417
Hospital discharges for alcohol or drug dependence	1,105
Hospital discharges for non-dependent abuse of drugs	570
Total	**4,092**

* First-listed diagnosis

Source: *Arizona Health Status and Vital Statistics*, 2005. Arizona Department of Health Services.

Rates of hospital admissions for methamphetamine, cocaine and heroin/opioid abuse have increased from 1990 to 2005. However, beginning around 1999, the rate of increase is steepest for methamphetamine. Notably, the rate of hospital admissions is over four times higher in 2005 than it was only six years earlier.

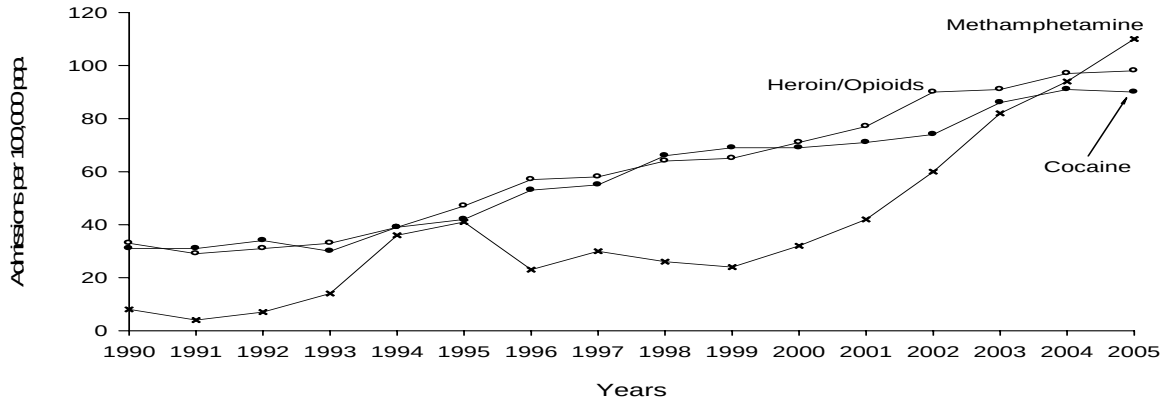
Finding: While hospital admissions for methamphetamine outnumbered those for cocaine in 2004, methamphetamine substantially outnumbered admissions for both cocaine and heroin/opioids in Arizona for the first time in 2005.

Table 4.6: **Trends in Hospital Admission Rates (per 100,000 Population) for Methamphetamine, Cocaine, and Heroin/Opioid, Arizona (1990-2005)**

	Methamphetamine	Cocaine	Heroin/Opioid
1990	8	31	33
1991	4	31	29
1992	7	34	31
1993	14	30	33
1994	36	39	39
1995	41	42	47
1996	23	53	57
1997	30	55	58
1998	26	66	64
1999	24	69	65
2000	32	69	71
2001	42	71	77
2002	60	74	90
2003	82	86	91
2004	94	91	97
2005	110	90	98

Source: Cunningham, J.K., *Methamphetamine, Cocaine, and Heroin/Opioid Hospital Admissions in Arizona: Trends and Regional Variations (1990-2005)*. Department of Family and Community Medicine, The University of Arizona.

Figure 4.5. Trends in Hospital Admission Rates (per 100,000 Population) for Methamphetamine, Cocaine, and Heroin/Opioid, Arizona (1990-2005).



Source: Cunningham, J.K. *Methamphetamine, Cocaine, and Heroin/Opioid Hospital Admissions in Arizona: Trends and Regional Variations (1990-2005).* Department of Family and Community Medicine, The University of Arizona.

Substance Abuse Treatment Need & Receipt Morbidity.

Table 4.7. **Number of Individuals with Substance Abuse Treatment Need with Receipt, Arizona, 2005**

	N
Admissions to substance abuse treatment services for alcohol	5,070
Admissions to substance abuse treatment services for heroin, cocaine, marijuana or other illicit drugs	7,975
Total	**13,045**

Source: *Treatment Episodes Data Set (TEDS),* 2006 Unpublished Data, Department of Health Services.

Substance Abuse Treatment Need Without Receipt Morbidity.

Finding: In the past year, a higher percentage of people reported that they did not receive treatment for alcohol use than for illicit drug use.

Table 4.8. **Percentage of Individuals with Substance Abuse Treatment Need without Receipt, Arizona, 2005**

Treatment for illicit drug use in the past year	2.67
Treatment for alcohol use in the past year	8.58

Source: *National Survey on Drug Use and Health, 2005*. Department of Health and Human Services.

Drunk Driving and Boating Injuries/Accidents Morbidity.

Table 4.9 groups alcohol-related driving and boating consequences together.

Although driving under the influence of alcohol is not an illness or injury in itself, this behavior is a necessary antecedent to alcohol-related injury or death and clearly increases the risk for these outcomes. For this reason, arrests for driving under the influence of alcohol are included in this section.

The Arizona Department of Transportation reported 5,766 alcohol-related crashes that caused injuries and the Arizona Game and Fish Department reported 17 alcohol-related boating injuries. Further, according to the Arizona Department of Public Safety, there were 34,859 arrests in Arizona for driving under the influence of alcohol in 2005. However, this figure should be interpreted cautiously since arrests can be influenced by administrative decisions, such as increased law enforcement activity to identify drunk drivers. If we assume that not all arrests for driving under the influence occurred at the time of an alcohol-related crash, the high number of arrests for driving under the influence (relative to the number of alcohol-related crashes) suggests that the number of crashes would likely have been higher if these arrests had not been made.

Table 4.9. **Drunk Driving and Boating, Arizona, 2005**

	N
Alcohol-related crashes[1]	7,651
Alcohol-related crash injuries[1]	5,766
Alcohol-related boating injuries[2]	17
Arrests for driving under the influence[3]	34,859

[1] *Arizona Motor Vehicle Crash Facts, 2005*. Arizona Department of Transportation.
[2] *Arizona Boating Safety Report. 2005.* Arizona Game and Fish Department.
[3] *Crime in Arizona, 2005*. Arizona Department of Public Safety.

HIV/AIDS Morbidity.

The incidence of HIV infection resulting from substance use is relatively small compared to other morbidity indicators. According to the Arizona Department of Health Services, in 2005, 92 cases of HIV/AIDS infection were reported as a result of injection drug use (Table 4.10). This number increases to 127 cases when HIV/AIDS cases resulting from men who have sex with men and inject drugs are added to the total number of substance abuse-related HIV/AIDS cases.

Overall, more cases of HIV/AIDS infection were reported as a result of injection drug use than those that result from men who have sex with other men and inject drugs.

Table 4.10. **HIV/AIDS Infection Attributable to Substance Use by Mode of Transmission, Arizona, 2005**

HIV/AIDS infection by injection drug use	92
HIV/AIDS infection by injection drug use and male homosexual intercourse	35

Source: *Arizona Health Status and Vital Statistics, 2005*. Arizona Department of Health Services.

Table 4.11. **Summary of Various Indicators of Alcohol/Drug-Related Morbidity, Arizona, 2005**

Clinical Dependence or Abuse	N
People with past-month binge alcohol use[1*+]	1,154,000
People with past year dependence on/abuse of alcohol[1*+]	466,000
People with past year dependence on/abuse of illicit drugs[1*+]	137,000
Individuals who were referred for substance abuse treatment[2]	4,727
Admissions to substance abuse treatment services for alcohol only[3]	4,743
Admissions to substance abuse treatment services for heroin, cocaine, marijuana or other illicit drugs[3]**	42,925
Number of persons needing, but not receiving, treatment for any illicit drug use in the past year[1]	130,000
Number of persons needing, but not receiving, treatment for alcohol use in the past year[1]	437,000
ED Visits for alcoholic or drug psychoses[4]	2,844
ED Visits for alcohol or drug dependence[4]	3,458
ED Visits for non-dependent abuse of drugs[4]	12,432
Hospital discharges for alcoholic or drug psychoses[4]	2,417
Hospital discharges for alcohol or drug dependence[4]	1,105
Hospital discharges for non-dependent abuse of drugs[4]	570
Drunk Driving and Boating	
Alcohol-related crashes[5]	7,651
Alcohol-related crash injuries[5]	5,766
Alcohol-related boating injuries[6]	17
Arrests for driving under the influence[7]	34,859
HIV/AIDS	
HIV/AIDS infection with injection drug use as the mode of transmission[4]	92
HIV/AIDS infection with injection drug use and male homosexual sex as the mode of transmission[4]	35

Note. ED indicates Emergency Department visits.

[*] *Aged 12 and over*

[**] Includes unspecified and alcohol with secondary drug use.

[+] Binge alcohol use is defined as drinking five or more drinks on the same occasion on at least one day in the past 30 days; illicit drugs include marijuana/hashish, cocaine (including crack), heroin, hallucinogens, inhalants, or prescription-type psychotherapeutics used nonmedically; dependence or abuse is based on definitions found in the 4th edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV).

[1] *National Survey on Drug Use and Health, 2005*. Department of Health and Human Services, personal communication with the Office of Applied Studies, Substance Abuse and Mental Health Services Administration.

[2] Arizona Families FIRST. Fiscal Year July, 2005 – June, 2006. Unpublished Data. Department of Economic Security.

[3] *Treatment Episode Data Set (TEDS) Highlights – 2005*.

[4] *Arizona Health Status and Vital Statistics, 2005*. Arizona Department of Health Services.

[5] *Arizona Motor Vehicle Crash Facts, 2005*. Arizona Department of Transportation.

[6] *Arizona Boating Safety Report. 2005.* Arizona Game and Fish Department.

[7] *Crime in Arizona, 2005*. Arizona Department of Public Safety.

Tobacco-Related Illness Morbidity.

Finding: In 2001, it is estimated that Arizona spent $924 million on health care for smoking-related illnesses.

Table 4.12. **Smoking-Related Expenditures (in millions of dollars), Arizona, 2001**

	Ambulatory	Hospital	Rx Drugs	Nursing Home	Other	Total
Total Expenditures	$5,135	$4,977	$1,397	$839	$1,300	**$13,648**
Smoking-Attributable Fraction (SAF)	8.47%	4.69%	6.73%	20.88%	5.26%	--
Smoking-Attributable Expenditures (SAE)	$435	$233	$94	$94	$68	**$924**

-- indicates not applicable
Source: *Smoking-Attributable Mortality, Morbidity, and Economic Costs,* Centers for Disease Control and Prevention, Department of Health and Human Services.

Trends in Morbidity.

Trends in Clinical Dependence or Abuse.

Finding: The percentage of people reporting past-year dependence on/abuse of alcohol rose 50% between 2000 and 2005 (from 6.40% to 9.70%), which translates to almost 1 in 10 people report having been dependent on or abusing alcohol during 2005.

Finding: The percentage of people reporting past-year dependence on/abuse of illicit drugs dropped by almost 30% between 2000 and 2005 (from 4.10% to 2.90%).

Table 4.13. **Trends in Clinical Substance Abuse or Dependence, 2000 – 2005**

	2000	2001	2002	2003	2004	2005
% of people with past-month binge alcohol use[1*+]	25.00	21.00	26.00	23.40	24.60	24.10
% of people with past year dependence on/abuse of alcohol[1*+]	6.40	5.80	9.60	10.40	10.20	9.70
% of people with past year dependence on/abuse of illicit drugs[1*+]	4.10	1.60	4.40	3.10	2.60	2.90
% of persons needing, but not receiving, treatment for illicit drug use in the past year[1]	--	--	4.30	2.90	2.40	2.70
% of persons needing, but not receiving, treatment for alcohol use in the past year[1]	--	--	9.40	10.20	10.20	9.10
ED Visits for alcoholic or drug psychoses[2]	--	--	--	--	2,462	2,844
ED Visits for alcohol or drug dependence[2]	--	--	--	--	3,522	3,458
ED Visits for non-dependent abuse of drugs[2]	--	--	--	--	11,533	12,432
Hospital discharges for alcoholic or drug psychoses[2]	--	--	--	--	2,398	2,417
Hospital discharges for alcohol or drug dependence[2]	--	--	--	--	1,613	1,105
Hospital discharges for non-dependent abuse of drugs[2]	--	--	--	--	605	570

-- indicates data that were not available for this report or were not collected in that year. Admissions to substance abuse treatment services are only listed for 2005 and 2006 because of new criteria for determining this number. The percentage of persons needing, but not receiving, treatment services for alcohol and illicit drugs is not listed for 2000 and 2001 because these estimates are not comparable to estimates for 2002 through 2005 due to methodological changes to the survey between 2001 and 2002.

[*] *Aged 12 and over*

[**] Includes the following substance categories: cocaine or crack; marijuana or hashish; heroin; other opiates and synthetics; other hallucinogens; methamphetamine; other stimulants; Benzodiazepine; other sedatives or hypnotics; inhalants; and other.

[+] Data for 2000 and 2001 are not comparable to data from subsequent years due to methodological changes to the survey between 2000 and 2001.

[1] *National Survey on Drug Use and Health, 2005*. Unpublished data. Department of Health and Human Services, personal communication with the Office of Applied Studies, Substance Abuse and Mental Health Services Administration.

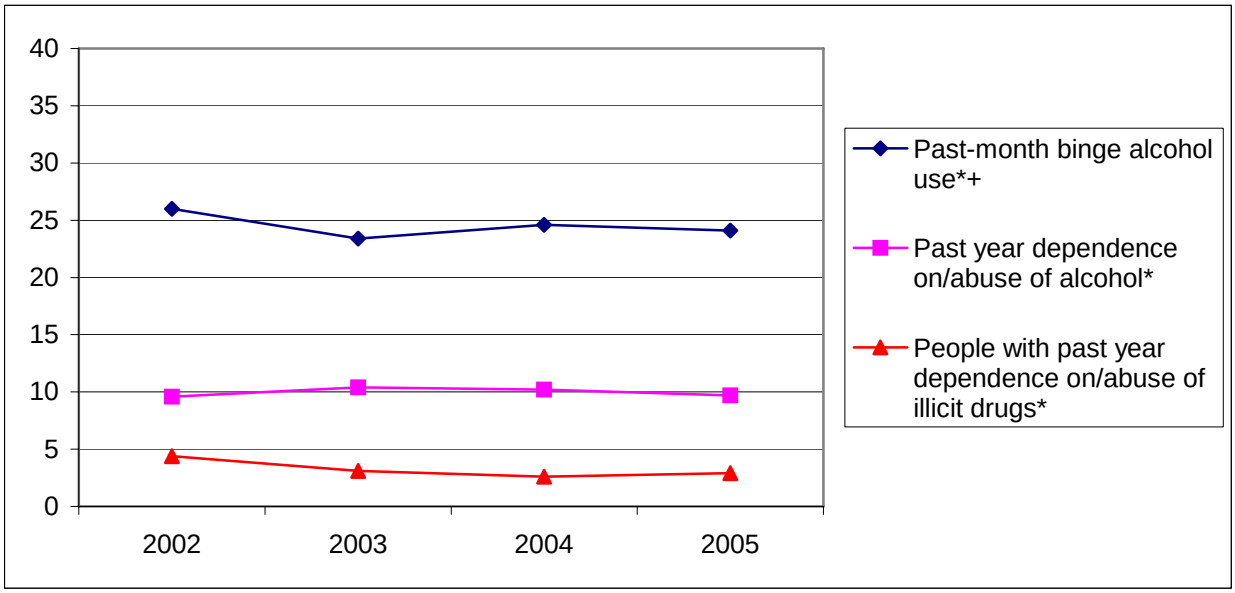
[2] *Arizona Health Status and Vital Statistics, 2004; 2005*. Arizona Department of Health Services.

Table 4.14. **Admissions to Substance Abuse Treatment Services, 2006**

Admissions for alcohol	5,070
Admissions for heroin, cocaine, marijuana or other illicit drugs*	7,975

* Includes the following substance categories: cocaine or crack; marijuana or hashish; heroin; other opiates and synthetics; other hallucinogens; methamphetamine; other stimulants; Benzodiazepine; other sedatives or hypnotics; inhalants; and other.
Source: Treatment Episodes Data Set (TEDS), 2006 Unpublished Data, Department of Health Services.

Figure 4.6. Trends in Percentages of People Reporting Binge Alcohol Use and Substance Abuse/Dependence, 2002 – 2005.



+ Binge alcohol use is defined as consuming 5 or more alcoholic beverages in one sitting.
* Estimated percentage of people 12 and older
Source: *National Survey on Drug Use and Health, 2005*. Unpublished Data. Department of Health and Human Services, personal communication with the Office of Applied Studies, Substance Abuse and Mental Health Services Administration.

Trends in Drunk Driving and Boating Injuries/Accidents.

In 2005, the percentage of high school students who reported either driving with someone who had been drinking alcohol or who drove after drinking alcohol is alarming. Over 12% of drivers (or more than 1 in 9) aged 16 – 20 were involved in alcohol-related fatalities or crashes that caused injury. Almost equal percentages of high school students reported driving with someone who had been drinking or driving after drinking alcohol when the survey was conducted in 2003. In addition, while relatively stable over the period of observation, alcohol-related crashes, alcohol-related crash injuries and alcohol-related fatalities that occur to underage drinkers have increased slightly between 2000 and 2005.

While both alcohol-related crashes and crash injuries involving Arizona adults have declined over the 5-year observation period, the decline in alcohol-related crash injuries is the more dramatic finding as the number of alcohol-related crash injuries that occurred in 2005 was over 15% lower than the number that occurred in 2000.

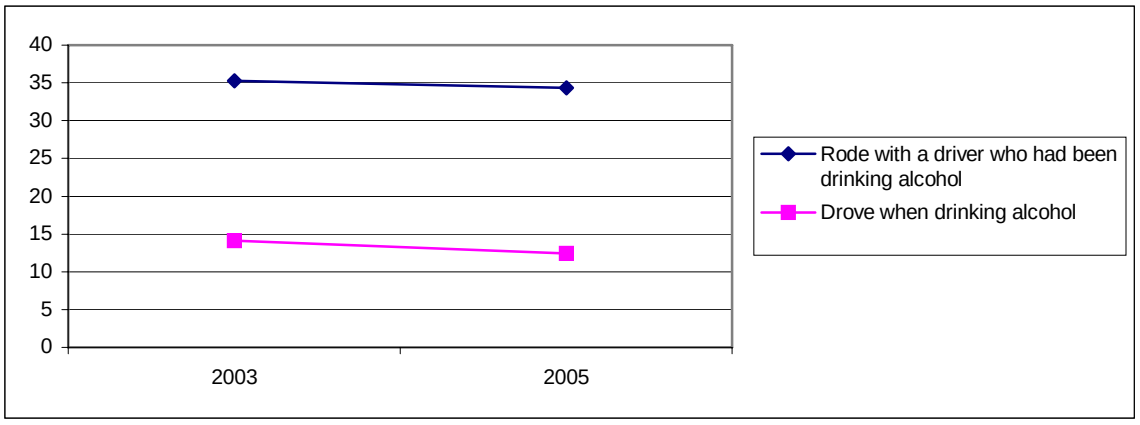
Finding: Over 1 in 3 high school students reported driving with someone who had been drinking alcohol and almost 1 in 8 high school students reported driving after drinking alcohol.

Table 4.15. **Percentages of High School Students Reporting Driving or Riding with Someone after Alcohol Use, Arizona, 2003 – 2005**

	2003	2005
Rode with a driver who had been drinking alcohol	35.30	34.30
Drove when drinking alcohol	14.10	12.40

Source: *Youth Risk Behavior Surveillance System*, *2003; 2005.* Centers for Disease Control and Prevention.

Figure 4.7. Percentages of High School Students Reporting Driving or Riding with Someone after Alcohol Use, Arizona, 2003 – 2005.



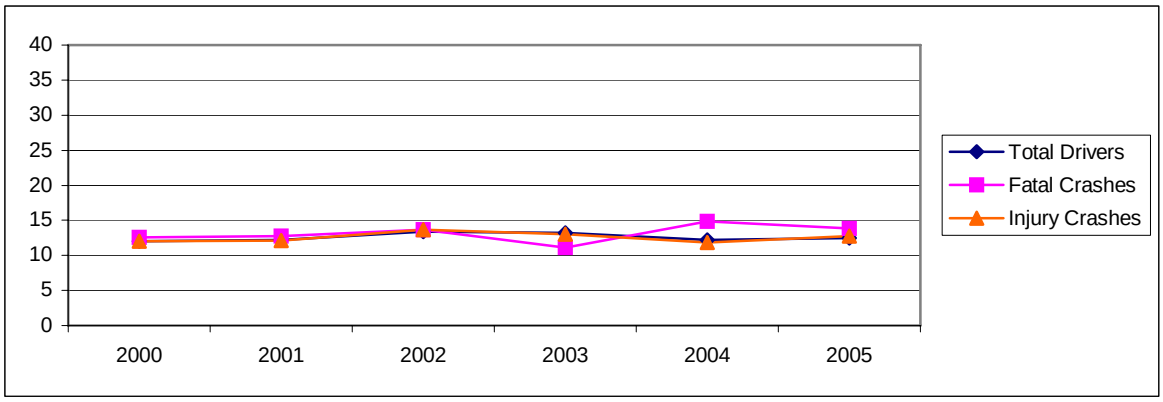
Source: *Youth Risk Behavior Surveillance System*, *2003; 2005.* Centers for Disease Control and Prevention.

Table 4.16. **Percentage of Drivers, Aged 16 – 20, Involved in Alcohol-Related Crashes, 2000 – 2005**

	2000	2001	2002	2003	2004	2005
Drivers in fatal crashes	12.60	12.72	13.71	11.12	14.89	13.82
Drivers in injury crashes	12.03	12.10	13.68	12.99	11.89	12.77
Total drivers involved in alcohol-related crashes	12.01	12.25	13.43	13.20	12.22	12.48

Source: *Arizona Crash Facts Summary, 2000; 2001; 2002; 2003; 2004; 2005*. Arizona Department of Transportation.

Figure 4.8. Percentage of Drivers, Aged 16 – 20, Involved in Alcohol-Related Crashes, Arizona, 2000 – 2005.



Source: *Arizona Crash Facts Summary, 2000; 2001; 2002; 2003; 2004; 2005*. Arizona Department of Transportation.

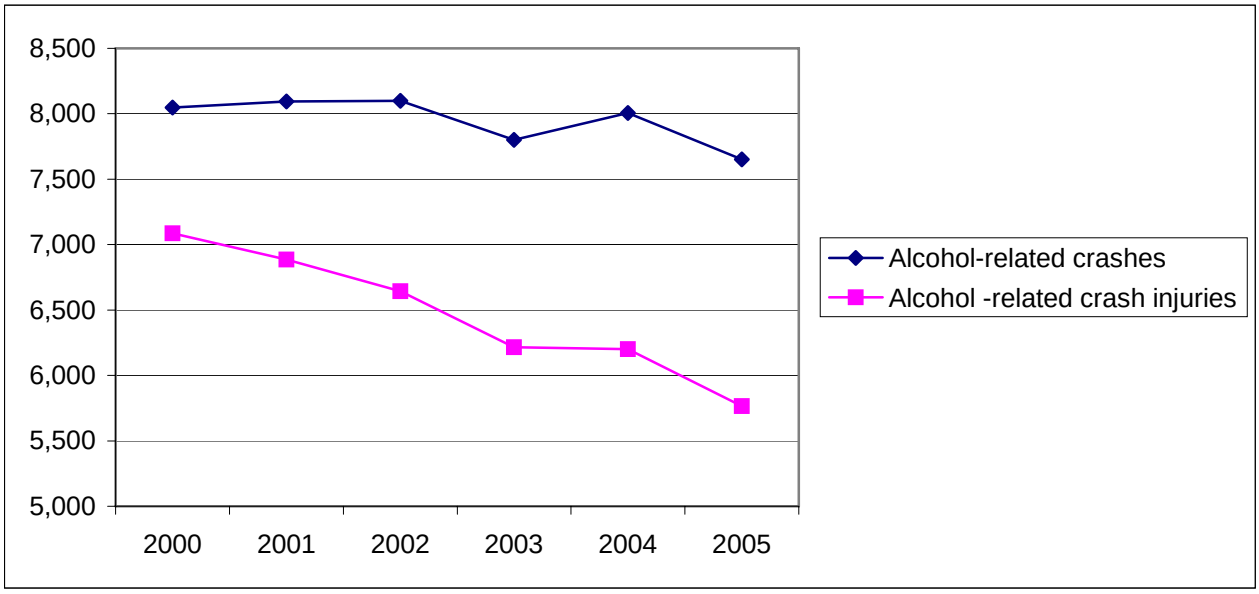
Finding: In a 4 year period (from 2002 to 2005), the number of arrests for driving under the influence of alcohol decreased by over 16%.

Table 4.17. **Trends in Drunk Driving and Boating Injuries/Accidents and Arrests, 2000 – 2005**

Indicator	2000	2001	2002	2003	2004	2005
Alcohol-related crashes[1]	8,048	8,095	8,100	7,800	8,005	7,651
Alcohol-related crash injuries[1]	7,087	6,886	6,644	6,215	6,202	5,766
Alcohol-related boating injuries[2]	--	26*	16*	20	13	17
Arrests for driving under the influence[3]	--	--	41,751	39,536	38,397	34,859

-- indicates data that were not available for this report or were not collected in that year.
* For 2001 and 2002, numbers indicate total number of accidents caused by alcohol/drug use combined; they are not indicative of number of alcohol-specific boating injuries.
[1] *Arizona Motor Vehicle Crash Facts, 2000; 2001; 2002; 2003; 2004; 2005*. Arizona Department of Transportation.
[2] *Arizona Boating Safety Report. 2000; 2001; 2002; 2003; 2004; 2005.* Arizona Game and Fish Department.
[3] *Crime in Arizona, 2002; 2003; 2004; 2005*. Arizona Department of Public Safety.

Figure 4.9. Trends in Alcohol-Related Crashes and Crash Injuries, 2000 – 2005.



Source: *Arizona Motor Vehicle Crash Facts, 2000; 2001; 2002; 2003; 2004; 2005*. Arizona Department of Transportation.

Trends in HIV/AIDS.

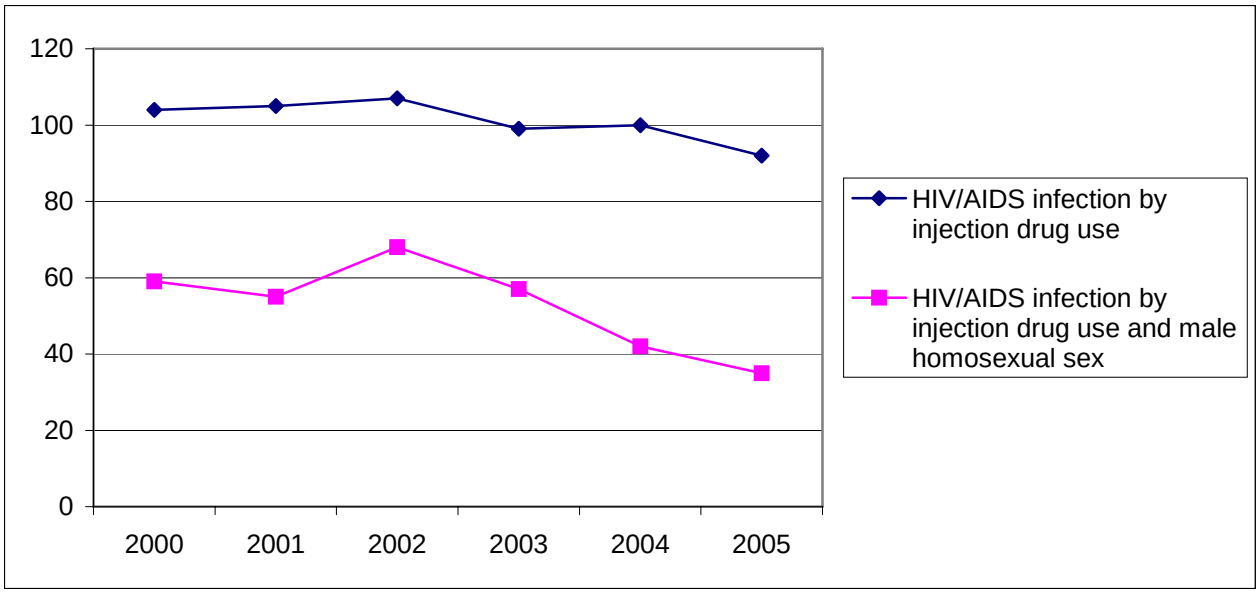
Finding: There appears to be a slight decrease in the incidence of HIV/AIDS transmission associated with drug use.

Table 4.18. **Trends in HIV/AIDS Infection by Mode of Transmission, 2000 – 2005**

Indicator	2000	2001	2002	2003	2004	2005
HIV/AIDS infection by injection drug use	104	105	107	99	100	92
HIV/AIDS infection by injection drug use and male homosexual sex	59	55	68	57	42	35

Source: *Arizona Health Status and Vital Statistics, 2000; 2001; 2002; 2003; 2004; 2005*. Arizona Department of Health Services.

Figure 4.10. Trends in HIV/AIDS Infection by Mode of Transmission, 2000 – 2005.



Source: *Arizona Health Status and Vital Statistics, 2000; 2001; 2002; 2003; 2004; 2005*. Arizona Department of Health Services.

Trends in Tobacco-Related Illness.

Longitudinal data on smoking-related illness were not available for this report. Thus, no conclusions can be drawn about trends in smoking-related morbidity.

Morbidity Summary: The Emergency Department appears to be used more often for the non-dependent abuse of drugs while admittance to the hospital appears to be the treatment method most often employed for those presenting with alcohol or drug-related psychoses. When we examine substance abuse treatment services, we find that the number of treatment admissions for heroin, cocaine, marijuana or other illicit drugs is higher than those for alcohol. Not surprisingly then, a higher percentage of people needed, but did not receive, treatment for alcohol use than for illicit drug use. Further, the percentage of people reporting past-year dependence on/abuse of alcohol have been on the rise while those reporting dependence on/abuse of illicit drugs have declined as has the number of arrests for driving under the influence of drugs or alcohol. Of interest is the large number of high school students who reported driving with someone who been drinking alcohol or themselves reported such behavior.